

WORKSHEET – REGRESSION

The table below displays data on the temperature (°F) reached on a given day and the number of cans of soft drink sold from a particular vending machine in front of a grocery store.

temperature	70	75	80	90	93	98	72	75	75	80	90	95	98	91	98
quantity	30	31	40	52	57	59	33	38	32	45	53	56	62	51	58

$$\bar{x} = 85.\bar{3}, \quad \bar{y} = 46.4\bar{6}, \quad s_x^2 = 107.09, \quad s_y^2 = 131.6952, \quad \sum_{i=1}^{15} (x_i - \bar{x})(y_i - \bar{y}) = 1627.667$$

1. Identify the explanatory variable (x) and the response variable (y).

explanatory variable: _____

response variable: _____

2. Draw a scatterplot of the data.

3. Compute the correlation coefficient r .

4. Based on the computed value of r , what can you say about the association between the temperature and the number of soft drinks sold.

5. Compute the slope b for the least squares regression line and give an interpretation of the slope **within the context of the problem**.
6. Compute the intercept a for the least squares regression line and give an interpretation of the slope **within the context of the problem**.
7. State the least squares regression line.
8. For a temperature of 85°F , predict how many cans of soft drinks will be sold.
9. Can you predict the number of soft drinks being sold for a temperature of 62°F ? Explain why or why not!
10. Compute the residual for the predicted values based on $x = 72$ and $x = 91$.
11. Compute the coefficient of determination and give an interpretation the coefficient of determination.